

REMARKS

The Office Action mailed on December 7, 2007, have been reviewed and the comments of the Patent and Trademark Office have been considered. Prior to this paper, claims 1, 3, 4, 6, 7, 9-20 and 22-27 were pending, with claims 11-20 and 22-25 being withdrawn from prosecution. By this paper, Applicants do not add any claims, and cancel claims 22 and 25. Therefore, claims 1, 3, 4, 6, 7, 9-20, 23-24 and 26-27 are now pending.

Applicants respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim Rejections Under 35 U.S.C. §103(a)

In the Office Action, claims 1, 3, 4, 6, 7, 9, 10, 26 and 27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Judge (United States Patent No. 4,682,444) in view of JP 10-217090 (JP '090). Applicants traverse the rejection of the claims, and respectfully submit that all pending claims are allowable for at least the following reasons.

The Cited References Do Not Suggest All Claim Recitations

The cited references still do not meet the third requirement of MPEP § 2143, which is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.”

As a preliminary matter, the Office Action asserts that it is not treating the recitations regarding the set offset displacement as being an intended use, and asserts that anything that is “capable of or can be adapted to” fall within the language following “adapted to” meets the feature. (Office Action, page 4, lines 12-14, emphasis added.) Not so.

It is respectfully submitted that the Office Action is conflating the recitation that the apparatus is “adapted to” have the recited set offsets with the basic concept of whether or not a device may be modified to have the structural feature that the device is recited to have as a result of it being “adapted to” have that feature. That is, the claims recite specific features

that the claimed invention includes (for a device to literally infringe, it must have those features), while the Office Action merely asserts that any device that is capable of being modified to have those features meets those recitations. This eviscerates the third requirement of MPEP § 2143, that the prior art teach each and every element of the invention, and a conflation of the requirements that the ordinary artisan have some rationale and have the prerequisite capability to actually modify the reference, on the one hand, with the requirement that the prior art teach or suggest all of the claimed elements, on the other.

Further, the Office Action's assertions are contrary to the requirements of MPEP § 2173.05(g), which state that a "functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art" and that "the Court held that limitations such as 'members *adapted to* be positioned' and 'portions . . . being resiliently dilatable whereby said housing may be slidably positioned' serve to precisely define present structural attributes of interrelated component parts of the claimed assembly. *In re Venezia*, 530 F.2d 956, 189 USPQ 149 (CCPA 1976)." (Emphasis added.) **Later boards have cited *Venezia*.**

As seen above, the MPEP states that the term "adapted to" precisely defines "present structural attributes." The word "present" qualifies the phrase "structural attributes," and means that those structural attributes are actually present in the device. A "structural attribute" that might be obtainable through modification of a prior art device, while not taught to be in the prior art device, is not "present," in the prior art device, and thus the rationale proffered in the Office Action attempting to justify its treatment of the language following "adapted to" does not meet the requirements of MPEP 2173.05(g).

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In view of the above, Applicants submit that claim 1 recites, as a patentably distinguishing feature, that the pressure applying mechanism

is adapted to operatively hold the plurality of shoes on the rear side of the lapping film in different contact areas in a partially overlapping relationship at a central region of the target shaped periphery of the workpiece and in non-overlapping relationship in both terminal regions of the target shaped periphery *such that the*

plurality of shoes are held in opposing offset positions with offset displacement of each of the plurality of shoes set to be less than the given oscillation stroke provided by the oscillating mechanism.

(Emphasis added.)

Neither Judge nor JP '090 teach or suggest the feature of shoes held as recited. Specifically, the shoes of JP '090 are not held in opposing offset positions such that their respective ***offset displacements are set to be less than the given oscillating stroke provided by the oscillating mechanism.*** JP '090 teaches nothing about the relative dimensions of the shoes with respect to the axial movement of the workpiece (JP '090 indicates nowhere that the drawings may be scaled to reverse-engineer this feature, and Applicants submit that even if the drawings were to be scaled, it is impossible to accurately extract such a teaching from JP '090). Judge does not remedy the deficiencies of JP '090.

Put another way, the above-identified elements of claim 1 are not taught anywhere in the cited references. Applicants thus request that in the event that the claims are not allowed in any next office action, the PTO fill in the chart below identifying where each element is taught in the cited references.

<u>Claim recitation:</u>	<u>Located exactly here in this cited reference:</u>
an oscillating mechanism . . . to allow the workpiece to be surface finished in the mid-concave profile,	
[a component] adapted to operatively hold the plurality of shoes on the rear side of the lapping film in different contact areas in a partially overlapping relationship	
at a central region of the target shaped periphery of the workpiece	
and in non-overlapping relationship in both terminal regions of the target	

shaped periphery	
such that the plurality of shoes are held in opposing offset positions with offset displacement of each of the plurality of shoes	
set to be less than the given oscillation stroke provided by the oscillating mechanism.	

Applicants submit that the above-chart cannot be completed, thus evincing the fact that the cited references do not teach or suggest each element of claim 1.

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Applicants previously submitted that the above-highlighted claim elements are more than just mere design choice, and, in response, *the Office Action asserts that those elements were “never treated as a design choice.”* However, the Office Action repeatedly asserts that it was within the skill of the artisan to modify the cited references to obtain that feature, while never identifying where those features are taught or suggested. Indeed, the exercise of filling out the above-proffered chart will make clear that there are elements not present in the cited references. Applicants understand that the only way for the PTO to alleviate a deficiency in the prior art regarding a recitation is to rely on design choice, and thus even though the Office Action asserts the contrary, the Office Action is, in fact, treating the modification as mere design choice, even if not using those words.

Applicants respectfully submits that reliance on “design choice” is only appropriate (if at all) when the difference between the prior art and the claims of the present invention amounts only to “Reversal, Duplication, or Rearrangement of Parts.” (See MPEP § 2144.04(VI), the only portion of MPEP § 2100 that mentions “design choice.”) The difference between the cited references and the present invention is more than just the reversal, duplication, or rearrangement of parts, if only because neither cited reference teaches the above-highlighted elements that may be reversed, duplicated, or rearranged. Instead,

modifying the cited references as proffered in the Office Action amounts to *physically altering* the parts of those references (assuming *arguendo* that nothing more is involved). Physically alternating parts is not the same as any of “reversal,” “duplication,” or “rearrangement.”

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The features of claim 1 missing from the cited references constitute a fundamental advancement over the prior art that enables the mid-concave profile to be obtained at the recited dimensions - an advancement which is only desirable in view of impermissible hindsight.¹ That is, the art recognizes nothing in the way of the desirability of the claimed features missing from the prior art.

Applicants respectfully submit that it would not have been obvious to modify the device of JP '090 as proffered by the PTO. Applicants point out that it is unnecessary that the relation between the offset displacement of the lap shoes 2 and the oscillation stroke of the work 1 of JP '090 are taken into account in the device of JP '090, as the teachings of JP '090 are simply not that sophisticated (as compared to the present invention). Also, as shown in Fig. 2, if the work 1 is oscillated with the larger oscillation stroke, the lapping paper 3 instantly rides on the curved surfaces of the work 1 while the offset displacement of the lap shoes 2 are with the relatively large dimension. *This results in the phenomenon that the offset displacement of the lap shoes 2 is larger than the oscillation stroke of the work 1.* Moreover, the structure of JP '090 is governed by a design constraint that prevents the work 1 from being over lapped to make the recesses 6 at the end portions of the oscillation stroke. JP '090 relates to a paper lapping apparatus having a lapping paper 3. Indeed, in Fig. 2, the lap shoes 2 are displaced in the axial direction X. However, as noted above, the objective of JP '090 is to prevent the work 1 from being over lapped to make the recesses 6 at the end

¹ In the invention of claim 1, to achieve the target shaped periphery of the surface finished workpiece with a surface profile formed in a mid-concave profile in a manner that is both precise and affords flexibility, the structure recited in claim 1 includes a plurality of shoes that are held in opposing offset positions with the offset displacement of each of the plurality of shoes being set less than the oscillation stroke that is provided by the oscillating mechanism.

portions of the oscillation stroke “S”, as is depicted in Fig. 4. Thus, this is the reason why JP ’090 teaches the structures depicted in Figs. 1 and 2 in which the lap shoes 2 have lapping regions that are asymmetrically set along the axis “X”. JP ’090 thus does not remedy the deficiencies of Judge with respect to claim 1.

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The PTO asserts that setting the stroke and offset parameters to optimize the operation of the device to arrive at the present invention (features admittedly not explicitly taught in any of the cited references) would have been well within the knowledge of one of ordinary skill in the art. However, the PTO provides no evidence supporting this alleged fact that is so critical to finding the present claims obvious. It appears that the PTO relies on common knowledge in the art, as is discussed and permitted in MPEP § 2144.03, to satisfy the third requirement of MPEP § 2143. However, Applicants note that § 2144.03 allows an applicant “to traverse such an assertion,” and that when an applicant does so, “the examiner should cite a reference in support of his or her position.” (MPEP § 2144.03, second paragraph.) Absent a citation by the PTO of a reference that can be evaluated for all its teachings, Applicants hereby traverse the assertion that it would have been common knowledge in the art that the features of the present invention regarding the offset displacement would be obvious to one of ordinary skill in the art for optimization purposes. **Applicants thus again request, relying on § 2144.03 that the PTO cite a reference and exactly identify where such a reference teaches the alleged common knowledge, or else allow the claims.**

Further, with regard to the assertion that the present invention would be arrived at through routine optimization efforts, Applicants again respectfully point to *In re Antonine*, the case cited in MPEP § 2144.05 II (Optimization of Ranges). (Applicants note that the Office Action provides no comment on this point whatsoever in the Office Action.) Referring to *In re Antonine*, the MPEP states that a

particular parameter must *first* be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonine* (citations omitted). (The claimed wastewater

treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.)

(Emphasis added.) As in *In re Antonine*, the prior art does not recognize that the recited claim features are result-effective variables, and no evidence has been proffered to the contrary. Accordingly, a *prima facie* case of obviousness has not been established for at least this reason.

Accordingly, claim 1 is allowable for at least the reason that none of the cited references teach or suggest the feature of the overlap as related to an oscillation stroke as claimed.

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Method claim 27 recites the action of lapping a workpiece to obtain (i) a mid-concave profile having (ii) a depth equal to or greater than 5 μ m and equal to or less than 20 μ m. (Applicants note that with the introduction of the phrase “adapted to” into claims 1 and 26, the PTO should impart patentable weight onto these functional limitations as well.) Neither Judge nor JP '090 teach or suggest either of these features. All that these two references teach is the finishing of a target shaped periphery of a workpiece to a smooth flat surface. Accordingly, the claims are allowable for at least this additional reason.

Again, the Office Action asserts that it was “well within the knowledge of one of ordinary skill in the art” to obtain the features of claim 27, but provides no evidence or rationale for this allegation. Applicants request in regard to claim 27, relying on § 2144.03 that the PTO cite a reference and exactly identify where such a reference teaches the alleged common knowledge, or else allow the claims.

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Claims 26 and 27 are allowable for the pertinent reasons that make claim 1 allowable as detailed above, and the claims that depend from claim 2 are allowable at least due to their dependency from claim 1, a claim that is allowable.

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Philips, cited as an “evidentiary reference,” does not teach or suggest the offset displacement of each of the plurality of shoes. Even if it did recite one or more of the above-identified missing elements of either of Judge or JP ’090, the Office Action has not alleged the obviousness of combining the teachings of Philips with either of these two references, and thus the teachings of Philips regarding satisfying the deficiencies of Judge / JP ’090 regarding MPEP § 2143 is meaningless in regard to the obviousness rejections proffered in the Office Action.

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The third requirement of MPEP § 2143 is not satisfied by the PTO with respect to any claim now pending, because the cited references do not teach each and every element of the present invention.

Lack of a Sufficiently Articulated Rationale to Modify or Combine the References

MPEP § 2143.01(V) states that “the proposed modification cannot render the prior art unsatisfactory for its intended purpose.” By modifying Judge as proffered in the Office Action to obtain a mid-concave finish of the work surface, Judge will not be able to produce a “barrel” shaped cam. Note that the purpose of Judge is to produce a barrel shaped cam. Thus, by modifying Judge as proffered in the Office Action, Judge is rendered unsatisfactory for its intended purpose, and thus the modification proffered in the Office Action violates MPEP § 2143.01(V)’s prohibition. Accordingly, a *prima facie* case of obviousness has not been established for at least this reason.

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The PTO asserts that it would have been obvious to modify JP '090 to arrive at the present invention to polish the center more than the peripheries. The Office Action repeatedly asserts that this would have been “desirable.” (See, *e.g.*, page 6, lines 1-4, *etc.*) Applicants submit that (i) the PTO has not identified where the prior art suggests the desirability of such an action, and (ii) the PTO has not established that the device of JP '090 could be so successfully adjusted (more on this below). The PTO all but relies on Applicants' disclosure for motivation to modify the primary reference to arrive at the inventions as claimed, and the PTO cites nothing in the prior art that provides *specific* motivation to modify the references to arrive at any of the independent claims. Instead, the PTO provides the circular rationale that because a secondary reference (JP '090) allegedly teaches an element missing from the primary reference (Judge), it would have been obvious to combine the two references because the secondary reference allegedly teaches advantages of general implementation of that reference.² Applicants submit that such rationale is circular and relies on impermissible hindsight. Moreover, this rationale would vitiate the requirement of a sufficiently articulated rationale to modify the prior art. This is because an overwhelming number of patents published by the JPO tout advantages of some sort or another (indeed, the JPO utilizes the problem-solution approach), and if the requirement of a sufficient rationale could be met by simply pointing to such advantages (or other advantages that are not taught), there would always be motivation to modify/combine references once a patent is found that teaches the missing element(s) of the primary reference.

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As to the specifics of the alleged motivation to modify/combine the references, the PTO asserts that it “would have been obvious . . . to modify the invention of Judge et al. with the offset arrangement as taught by JP '090 to prevent local excessive shaving.” Applicants disagree that such desirability is found in the teachings of JP '090.

True, in the “problem to be solved” section of the abstract of JP '090, JP '090 states that the problem to be solved is to “prevent local excessive shaving,” just as is quoted in the Office Action. However, JP '090 immediately provides, as a solution, the use of an

² Which it does not, as detailed below.

asymmetrically arranged pair of lap shoes, with reference to Fig. 1. The abstract does not comment on whether an offset arrangement “prevents local excessive shaving.” Thus, the rationale proffered by the PTO does not rise to the standard required by MPEP § 2143.01, and a *prima facie* case of obviousness has not been established.

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MPEP § 2144.05(III), entitled Rebuttal Of *Prima Facie* Case Of Obviousness, states that a “*prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention.” (MPEP § 2144.05(III), second paragraph, emphasis added, citations omitted.)

As previously noted, neither cited reference teaches or suggests the claimed features as they relate to producing a mid-concave profile. In fact, JP '090 teaches away from this feature, because JP '090 teaches that it seeks to “improve *straightness* of a finishing surface.” (Problem to be solved section, emphasis added.) Thus, far from imparting a mid-concave profile onto the workpiece, JP '090 seeks to eliminate such a profile. Furthermore, Judge teaches that its assembly results in a “barrel shaped” cam. Therefore, both references in fact teach away from the invention as claimed.

The Office Action attempts to counter this solid argument by asserting in a total conclusory manner that the argument is “invalid,” and that the “intended result does not teach away from the apparatus claims.” Conclusory assertions do not represent sufficient argumentation to rebut the fact that the cited references teach features that are the opposite of Applicants’ features, and that those references stress the desirability of those opposite features.

The Office Action asserts that the teachings identified by Applicants to represent a “teaching away” from the claimed invention are not persuasive, *alleging that these are simply exemplary embodiments in the reference*. Not so. These are more than mere exemplary embodiments in the references. Indeed, they go to the very heart of the teachings in the references. For example, the entire purpose of JP '090 is to “improve straightness.” How can a reference that is *totally directed towards “improving straightness”* not be considered to

teach away from a non-straight surface? That is, the ordinary artisan, who is by definition not an innovator, seeking to obtain a non-straight surface, would not have sought out JP '090, which teaches a device to improve straightness! The skilled artisan seeking a non-straight surface would decidedly not have sought out a reference that teaches improving straightness. Along the same lines, the entire purpose of Judge is to provide a barrel shaped cam. The barrel shaped cam is not a mere exemplary embodiment – **it is the embodiment**.

Accordingly, to the extent that a *prima facie* case of obviousness might have been established, such case is hereby rebutted.

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In summary, because of the lack of suggestion or motivation in the prior art to modify the reference, the first requirement of MPEP § 2143 was not met by the PTO with respect to the claims as previously pending, and cannot now be met, as detailed above, and, hence, a *prima facie* case of obviousness has not been established.

Lack of a Reasonable Expectation of Success

As a preliminary matter, the Office Action made no attempt to rebut the arguments Applicants previously made regarding a lack of a reasonable expectation of success, arguments that Applicants again present.

MPEP § 2143.02 permits references to be modified or combined to reject a claim as obvious only if there is a reasonable expectation of success. There is no evidence in the references, and certainly none identified by the PTO, that one of ordinary skill in the art would have had a reasonable expectation of success in achieving Applicants' invention by modifying JP '090. The PTO asserts that it would have been obvious to modify JP '090 to arrive at the present invention in order to "polish the center [of the workpiece] more than the peripheries," yet has provided no evidence indicating that the relatively coarse device of JP '090 could be so adjusted. That is, Applicants submit that the skilled artisan might have considered the device of JP '090 to be incapable of adjustment as proposed by the PTO, and

the PTO has not provided any evidence to the contrary. (Applicants note that this example is simply a starting point for a showing of a reasonable expectation of success; more would be needed.) Thus, one of ordinary skill in the art would not have seen the combination of the references as producing a successful finishing device as claimed. Because of this, the second criteria of MPEP § 2143 has not been met by the PTO, and a *prima facie* case of obviousness has therefore not been established.

Request for Rejoinder of Withdrawn Claims

Claims 11-25 stand withdrawn. Applicants note that these claims depend either directly or ultimately from claim 1. Applicants respectfully request that these claims be rejoined and allowed due to their dependency from claim 1, a claim that is allowable. Applicants respectfully submit that no significant burden is placed on the PTO by rejoining and examining these claims. Indeed, such action is concomitant with the indication that “upon allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim.”

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for

such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Examiner Shakeri is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date my 03, 2008 By 

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 295-4747
Facsimile: (202) 672-5399

Martin J. Cosenza
Attorney for Applicants
Registration No. 48,892